What is claimed is:

1. A divider of a higher-radix type for obtaining a quotient by referring to a divisor and a dividend normalized respectively so as to satisfy a range of $1/2^K$ or more and less than $1/2^{K+1}$ (k being a positive integer), and to a length of bits defined by a radix for operations and a maximum number of digits in all bits of a partial remainder, comprising:

a scaling factor generating section to generate a multiplication factor used for performing a scaling so that said divisor falls within a specified range;

a multiplying section to multiply each of said divisor and said dividend by said multiplication factor;

a divisor tripled-number generating section to generate a tripled number of said divisor which has been multiplied by the multiplication factor;

a repetitive operating section to do division repeatedly by using said divisor and said dividend which has been multiplied by the multiplication factor and said tripled number of said divisor; and

wherein said repetitive operating section produces a quotient by generating high-order bits of 4-bit partial remainder represented in a twos complement notation by referring to a number of high-order bits, with an arbitrary length, of said partial remainder and by referring to high-order 4 bits of said partial remainder.

2. The divisor according to Claim 1, wherein said scaling factor generating section generates said multiplication factor so that said divisor falls within a range of $5/3 \times 1/2^K$ or more

and less than $3/4 \times 1/2^K$.

3. A divider of a higher-radix type for obtaining a quotient by referring to a divisor and a dividend normalized respectively so as to satisfy a range of $1/2^K$ or more and less than $1/2^{K+1}$ (k being a positive integer), and to a length of bits defined by a radix for operations and a maximum number of digits in all bits of a partial remainder, comprising:

a scaling factor generator to generate a multiplication factor used for performing a scaling so that said divisor falls within a specified range;

a multiplier to multiply each of said divisor and said dividend by said multiplication factor;

a divisor tripled-number generator to generate a tripled number of said divisor which has been multiplied by the multiplication factor;

a repetitive calculator to do division repeatedly by using said divisor and said dividend which has been multiplied by the multiplication factor and said tripled number of said divisor; and

wherein said repetitive calculator produces a quotient by generating high-order bits of 4-bit partial remainder represented in a twos complement notation by referring to a number of high-order bits, with an arbitrary length, of said partial remainder and by referring to high-order 4 bits of said partial remainder.

4. The divisor according to Claim 1, wherein said scaling factor generator generates said multiplication factor so that said divisor falls within a range of $5/3 \times 1/2^K$ or more and less

09/886,058 - 05/14/04

than $3/4 \times 1/2^K$.